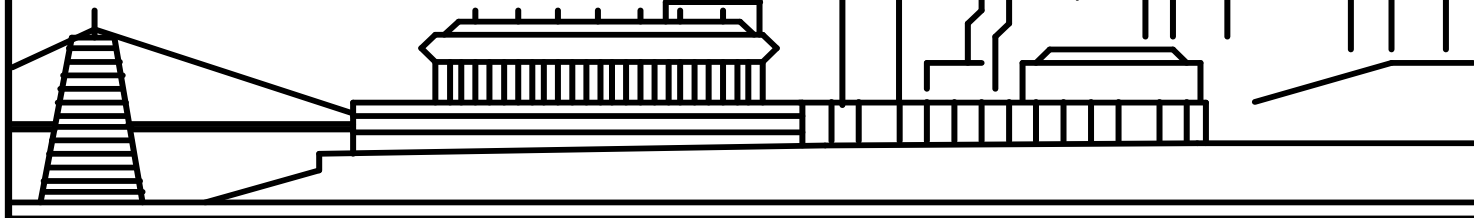




**INSTITUTE OF
ELECTRICAL &
ELECTRONICS
ENGINEERS, INC.**



SEPTEMBER 1995

IEEE CINCINNATI SECTION NEWSLETTER

OCTOBER MEETING Tour of CTC's Laboratory Facilities

DATE: THURSDAY, OCTOBER 26, 1995

PLACE: Cincinnati Technical College Room 206 - Project Room

TIME : 7:00 p.m. (Meet in Engineering Area)

Reservations are required!
Please note that this is NOT a dinner meeting!!
Please call Dee Scott at
385-9446
by NOON, Wed. October 25th

BACKGROUND OF THE SPEAKERS

The tour will be conducted by Messrs. Steve Yelton and Gary Webster - Program Chairpersons.

Steve Yelton is Program Chairman for CTC's Electronic Engineering Technology and Biomedical Engineering Programs. Gary Webster is Program Chairman for the Computer Engineering Technology Program.

DIRECTIONS

Enter from Central Parkway to the Guard Station. Tell the Guard you are to attend the IEEE meeting and you will be directed where to park.

CHAIRMAN'S MESSAGE

by Steve Olenick

I hope you all had a great summer. I've been putting off writing this note because the weather has been so nice lately that I would like summer to remain with us a little longer. In my mind, preparing this message would signal the start of winter. My ride North on I-71 in a dark rain this morning was all the signal I needed.

Elsewhere in the Newsletter, you will find a note about our upcoming election for Member-At-Large. We heartily welcome "new blood" to become part of the Executive Committee. Contact Dick Reiman or myself if you are interested in becoming more active in the chapter.

We had planned to present a networking meeting on October 5th, but our featured presenter cancelled due to personal reasons. We hope to re-schedule it for next spring. You will also find details on our tour scheduled for October 26th in this Newsletter. We are trying to line up meetings for November and December. If you have any suggestions for technical meetings, please contact me at 513-573-6555 or e-mail me at SOLENICK@CINELE.COM.

Referring back to my January message, I spoke about a reasonable cost for Internet service. In the last few weeks, I've noticed ads in the Wall Street Journal that offered full internet service for \$15.

The Windows 95 "sneak preview" we offered back in January said it would ship in August -- it did. Some of my Mac friends grudgingly acknowledge improvements such as the Desktop. However, I know I will not run it until I replace my "aging" 25MHz, 386 SX with at least a 50MHz DX with 8-16 Megs of RAM. Not only has Bill Gates given new life to software vendors (We'll eventually be compelled to upgrade to 32 bit Apps!) he also has provided an expanded market for all the computer manufacturers (486 DX and Pentiums) and their device suppliers (\$40 per Mag of RAM times 8 or 16!).

Until next time...

**A MESSAGE FROM
YOUR PACE CHAIRMAN**

By Bill Lohner

"A Network of Professional Activities for Engineers"

This month I would like to comment on the PACE annual conference I attended in Cedar Rapids, Iowa. The meeting was attended by 267 PACE delegates and members including committee chairmen, PACE officers and staff. This was the largest attendance they had ever had at this meeting. The purpose of this meeting was to discuss IEEE member engineer problems, how to help solve these problems, train PACE chairmen, promote student activities and plot a course for the future. Also attending the meeting from the Cincinnati Section was Jim Everly, PACE Precollege Education Activities Program Coordinator of Region 2.

I attended the PACE leaders training session the first day of the conference which covered IEEE-PACE organization, PACE activities, the role of the PACE leader, organizing PACE projects and using the Internet for PACE. This program was designed to help new PACE chairmen such as myself to get started.

A summary of the conference sessions and workshops I attended are as follows:

- Introduction to Electronic Mail (E-mail)
- Consultant Networks
- IEEE Role in National Technical Policy
- In Pursuit of a Resilient Career
- Involving IEEE Student Branches in Technical Activities
- Engineering Your Career
- IEEE Presidential Candidates (Question & Answer Session)
- IEEE Organizational Improvement
- Region 2 PACE Activities and Problems Issues Forum

As you can see it was a very comprehensive conference. You may ask "What does this do for the Cincinnati Section?"

My first obligation to our section is to find out the needs and concerns of our section membership. To do this, I need to hear from you. Please send me a note or call me.

Some of the things I am considering are as follows:

Give a brief description of a PACE topic before section meetings
"Jobs wanted, jobs needed" section in the Newsletter.
Job referral through E-Mail (Directory)
PACE Section meeting.

These are just some items that can be beneficial to the Cincinnati Section. They can only be successful with YOUR input, participation and help (volunteering to work on some of the above topics).

William J. Lohner
PACE Chairman
8703 Indianwoods Drive
Cincinnati, Ohio, 45251
(513) 385-7268

THE INVENTION OF COLOR TELEVISION - PART 1

by R. J. Reiman, Historian

By 1949, monochrome television had become a commercial success, 10 million sets had been sold, and programs were available to the general public. A change to color television would only be licensed if the color broadcast signal could also be received as a monochrome signal on these sets. This greatly complicated the technology. RCA was the leading company in the television field, with CBS a distant second, but CBS advocated the field sequential color system which utilized rotating disk on which red, green and blue color filters are mounted. The system was not "compatible" with the monochrome requirement cited above, but it was practical, especially under laboratory conditions, and overcame the limitation that the color television tube, which can integrate three channels of signals (dot sequential), had not been invented.

CBS was led by William S. Paley, who was opposed by RCA's David Sarnoff. CBS executives Frank Stanton and Peter Goldmark, were opposed by RCA's Elmer Engstrom and George H. Brown. RCA had a technical staff edge, more development funds, and the virtually unlimited determination of Sarnoff to make the RCA's dot sequential color system the winner.

The field sequential system (See Figure 1) displayed red, green, and blue television images in sequences, and depended upon the retentivity of the eye to merge these into a single color picture. If, however, flicker and picture sharpness were to be maintained at the level of monochrome television, a field sequential broadcast signal would require three times the bandwidth of monochrome. A compromise or trade off was reached by increasing the bandwidth from 4 to 5 MHz, number of frames were reduced from 30 to 20 per second, and scanning lines reduced from 525 to 343. RCA labeled this system as "mechanical", which was true of the color tube system only.

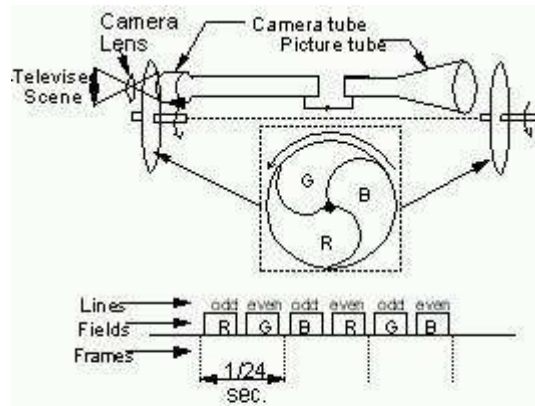


Figure 1 - The Field Sequential Color System.
(Top) Operation of Field Sequential Color System;
(Bottom) Color Transmission Sequence in Field Sequential Systems.

The basic operation of the field sequential color system is shown above. Light from the scene passes through a rotating disk on which red, green and blue color filters are mounted. Thus a camera tube is exposed in sequence to the red, green and blue color components of the scene. A disk at the receiver, similarly equipped with color filters, rotates in synchronism so that the light from the kinescope passes through the red filter, for example, while the camera tube is being exposed to red light from the scene.

The bottom portion of Figure 1 shows the color sequence in successive fields of the color signal as proposed by CBS in the 1949 hearing. Note that only two colors are included in each frame; for example, frame 1 has red odd lines and green even lines. Six fields, or 1/8 second, was required to scan all lines in all three colors. This caused fast-moving white objects to exhibit color break-up -- that is, to appear as a series of colored objects.

RCA's dot sequential system approach to solve the bandwidth limitation (see Figure 2), was one proposed by Alda Bedford of RCA, the use of "mixed highs." This relied on the limitation of the eye's relative insensitivity to the fine detail of color, the portion of the picture that requires the transmission of higher frequency components. Bedford proposed that these components be separated from the three color signals, mixed, and then added to the GREEN signal. The bandwidth of the red and blue signals could then be reduced substantially. Another addition, the use of a burst (train of 8 cycles of a sine wave) to the color signal provided a solid synchronism between camera source and receiver, and overcame noise which would cause instability. Field tests brought about the change of color to orange-red and blue-green to take advantage of the eye's insensitivity to fine detail in the blue-green region, thereby narrowing the blue-green band.

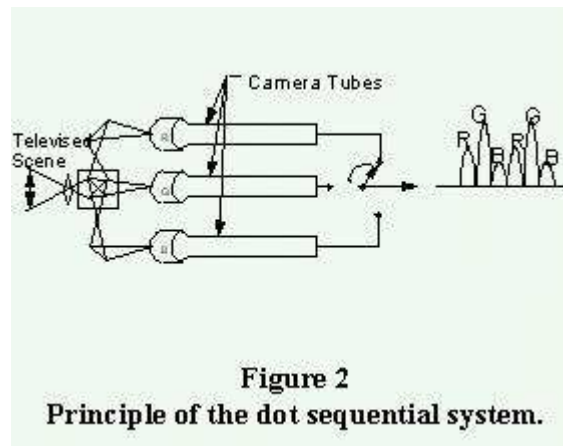


Figure 2
Principle of the dot sequential system.

Red, green and blue color signals are produced continuously and simultaneously. These signals are then sampled in sequence at a rapid rate, nominally 3.6 MHz. The output of the sampling process is a series of pulses, each having an amplitude proportional to the amplitude of the corresponding color signal at that point in the picture. This signal produces a series of tiny (approximately 0.03" wide) colored dots on a tricolor kinescope. These are perceived by the eye as a single color with a hue determined by the relative amplitude of the red, green and blue pulses at that point.

CBS won approval of its field sequential system and started expensive color broadcasts. However, the sets did not sell and had no audience. CBS was able to gracefully back-out by the intervention of the Korean War, and the ban on strategic material.

IEEE NEWS

IEEE-USA UNVEILS 'WHAT IS AN ENGINEER?' SLIDE PRESENTATION, HELPS EXPLAIN ENGINEERING PROFESSION TO STUDENTS

WASHINGTON, Mar. 20 -- IEEE members who talk to precollege groups about engineering careers can enliven their presentations with "What is an Engineer?", a new IEEE-USA slide show. IEEE-USA's Precollege Education Committee developed the slides, script and speaker's guide to help members describe engineering as a profession and outline the educational requirements for practicing engineering in industry.

Engineers new to making classroom presentations will appreciate the "What is an Engineer?" kit's guidelines on preparation, information on student needs by grade level, and classroom presentation tips. The suggested script is approximately 20 minutes in length and is easily adaptable to the speaker's own qualifications, insights and personality. Forty-two slides provide a stimulating visual focus for the information provided in the script.

To borrow or purchase a copy of "What is an Engineer?", contact Ann Hartfiel of the IEEE-USA offices: IEEE United States Activities, 1828 L Street, N.W., Suite 1202, Washington, D.C. 20036-5104; 202-785-0017, ext. 321; 202-785-0835 (fax); or a.hartfiel@ieee.org (Internet). The cost for purchase of the kit is \$20 (with check made payable to IEEE-USA).

CAREER TIPS FOR THE '90s OFFERED TO ENGINEERS

WASHINGTON, May 8 -- To help engineers prepare for a more secure future and to bolster their engineering careers, IEEE-USA has combined a half-dozen top papers from its recent Careers and PACE conferences into a single publication, Career Advice for Engineers in the 1990s.

With topics ranging from coping with corporate mergers to working in an R&D environment, the fact-filled book included especially useful information for engineers working in the current climate of uncertainty brought on by downsizing, organization flattening, mergers and global competition. The papers outline new strategies being developed by human resource specialists and managers to ensure that engineering maintains its vital role in the competitive world of the 1990s.

List price of Career Advice for Engineers in the 1990s is \$8.95. The price for IEEE members is \$4.95. To order (Catalog No. UH0197-4), call 800-678-IEEE or fax 908-981-9667.

IEEE-USA CAREERS CONFERENCE ISSUES CALL FOR PAPERS

WASHINGTON, May 8 -- IEEE-USA is seeking success stories from engineers and their organizations for its 1996 Careers Conference, "Winning in a Global Economy: Helping Engineers Develop Career Resilience." The only national conference devoted entirely to engineering careers will be held April 11-12, 1996, in Minneapolis.

In a call for papers, the technical professional society is requesting new strategies for coping with globalization, re-engineering, downsizing and outsourcing -- practices that are creating chaos in the careers of many engineers.

Papers are invited on any aspect of these topics:

New designs for engineering careers;

Partnerships among engineers and employers, universities, or associations that focus on developing engineers for successful careers in a chaotic environment;

Case studies of successful interventions or activities that provide engineers with career resilience or new career management abilities; and

Benchmark practices for developing engineers to succeed in new models of work.

Deadline for a proposal and a 500-word abstract is July 1, 1995. Speakers will be notified on Aug. 15. Papers are due Nov. 1.

This is the ninth biennial Careers Conference sponsored by IEEE-United States Activities, which promotes the professional careers and technology policy interests of the nearly quarter-million IEEE members in the United States.

For further information, contact Marilyn Sumpter, IEEE-USA, 1828 L Street, N.W., Suite 1202, Washington, DC 20036; 202-785-0017, ext. 336; 202-785-0835 (fax); or m.sumpter@ieee.org.

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Bob Haas - Vice Chairman	231-2584
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Ron Harbaugh - Member-At-Large	352-6202
Jack Beckmeyer - Arrangements Chairman	353-2643, 353-2671 (Fax)
Bill Lohner - PACE Chairman	385-7268
Bob Morrison - Editor	287-3697 (Office), 287-3698 (Fax)

SEPTEMBER 1995

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